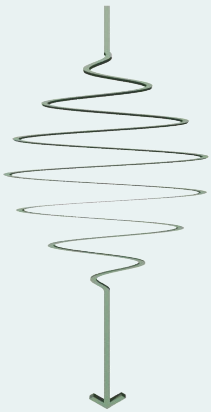


February 4th, 2011 - 3:00 pm

Seminar Room 108, DESY Bldg. 49



Max Planck
Research
Department
for
Structural
Dynamics



SEMINAR



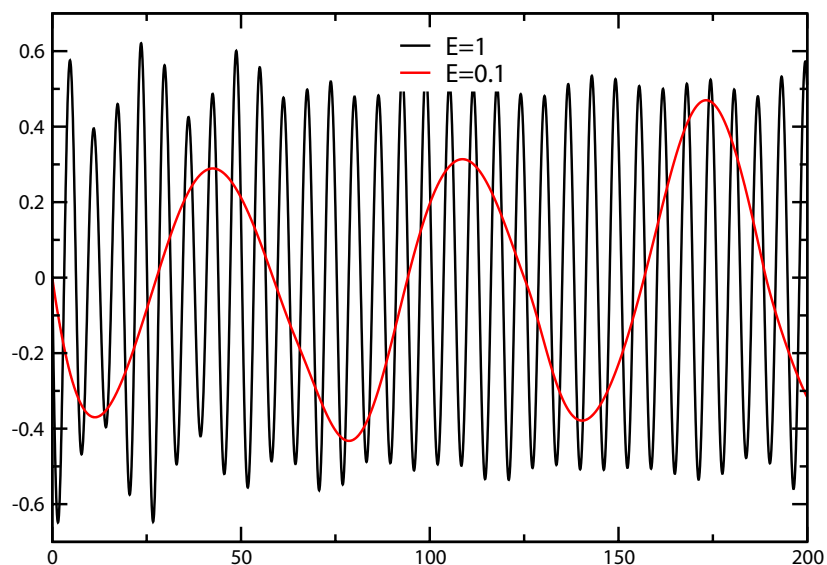
Alexander Joura

MPSD, Condensed Matter Division, Hamburg

The Hubbard model in the DC electric field: nonequilibrium calculation

We examine the Hubbard model in the presence of a large uniform electric field with arbitrary time dependence. Within Keldysh nonequilibrium formalism we derive general relations for the Hartree-Fock Green's functions. Using second order perturbation theory in Hubbard interaction U , we numerically calculate the retarded and Keldysh Green's functions in case of a constant electric field. This, in particular, allows us to study the nonequilibrium electric current in the system. In the metallic regime, calculations show that the current has AC-component only, i.e. so-called Bloch oscillations.

Electric current vs. time
 $T=1, U=0.5$



Host: Andrea Cavalleri, Condensed Matter Division, MPSPD, CFEL